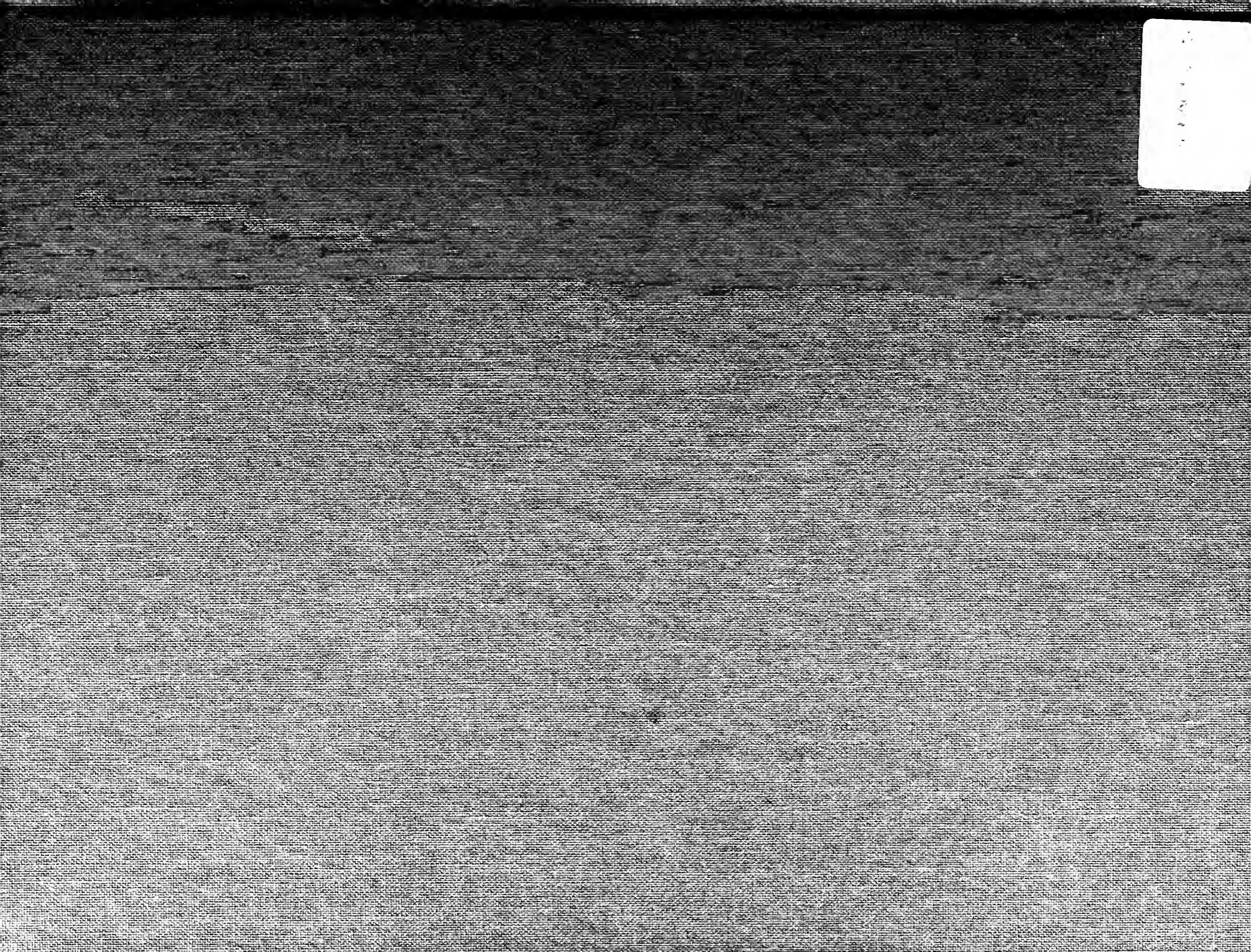

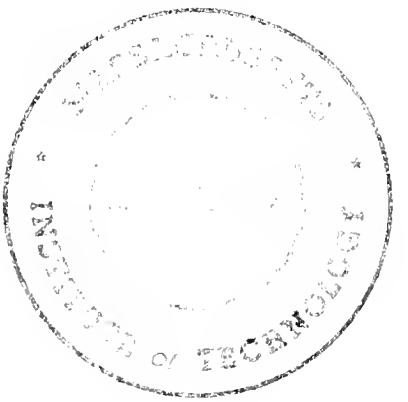

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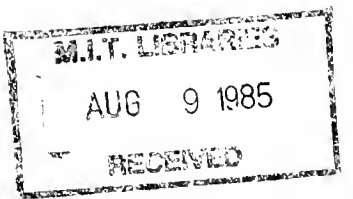
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Content Analysis of Annual Reports For Corporate Strategy and Risk

by

Edward H. Bowman, M.I.T. *

This paper has the dual purpose to describe the possible uses of content analysis of annual reports for corporate strategy investigations as well as to explore some new ideas about risk and its relationship to corporate strategy. Therefore some general uses of content analysis will be explored, followed by some more particular uses to test some ideas about risk - nature, attitudes, and effects. We deal then with a readily available but neglected method, content analysis, and a kaleidoscopic topic, strategic risk.

Strategic analysis for either the manager or the academic ordinarily requires data for purposes of problem identification, analysis, alternative creation, evaluation, and choice. These data may pertain to essentially two different locales, inside the firm and outside the firm. One main focus of data outside the firm is other firms, ordinarily associated with a particular industry. These industry connected firms may be competitors, suppliers, or customers. In addition to the set of firms closely identified to an industry however, special requirements or issues may generate interest in firms such as potential merger candidates, either as buyer or seller, either as friendly or unfriendly. Beyond such direct issues, an analysis of firms may be required as an aid to understanding particular problems such as risk, or growth, or corporate social responsibility.

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* I am indebted to many colleagues at M.I.T. for their comments on an earlier draft of this paper.

Data about particular firms, or sets of firms such as industries, or strategic groups within industries, are often rather difficult to obtain. Interviews with individuals presently or previously connected with the companies, newspaper and magazine material, customers and suppliers, the products themselves, all are sources of some information. Where the interest is in a number of firms, these mentioned sources however are hardly comparable or standardized.

The source of firm and industry data to be discussed here is content analysis of annual reports. In addition to several studies about a number of issues and with a number of companies, our work has also dealt with three different industries, the food processing industry, the computer peripheral industry, and the container industry. Half a dozen articles describing our work will be partially summarized as background here, and some new analysis will be added.

The purpose of the order of presentation of the material here is to illustrate the uses as well as testing the method of content analysis of annual reports, first in an area dealing with risk and uncertainty in a latent manner. Then a more direct discussion of risk will be followed by our work in several extensive sets of industries, followed by the further use of content analysis of annual reports to test two major explanations of a risk paradox, namely that company risk and return are empirically negatively correlated within most industries.

Content Analysis

Content analysis of written documents, and spoken presentations can be transcribed into written form as well, involves coding words, phrases, and sentences against particular schema of interest. Ordinarily constructs are well thought out before the coding starts. The content analysis can include

multidimensional coding or as in most of the material described here a rather simple coding scheme.

While the coding process may be simple or complex, sometimes the extended quotes themselves are helpful. For example, consider the idea of corporate culture, which has recently received considerable attention, as an illustration of comparative analysis. One view of corporate culture, that of Professor Ed Schein's, deals with at least three levels of culture manifestation, artifacts, values, and underlying assumptions [1981]. It is especially the underlying assumptions which specify the important problems and their various resolutions, which may cause culture conflict. For instance, a merger between two sizable firms may be greatly troubled by such conflict, largely unanticipated. For an example of insight into differences in corporate cultures, consider the differences in the quotes from two highest profit quartile companies in the food processing industry and two lowest profit quartile companies addressed to government price controls in 1973 annual reports [Bowman, 1976]:

"The well-publicized problems of food processors under the 'Freeze' largely continued during the early stages of 'Phase IV', penalized this Division. To avoid selling at below cost under the ill-conceived, counter productive regulations, numerous sale and purchase contracts were cancelled, and production was substantially curtailed....The negative effect of the 'Freeze' and 'Phase IV' on pre-tax profits for this Division is estimated at approximately $2 million, about equally divided between the two fiscal years." (Bottom Quartile profits company).

"....due to the Federal Government's unreasonable and illogical interpretation of 'ceiling prices' as applied to the products of this Division... losses were incurred on inventories and future sales commitments." (Bottom Quartile profits company).

"The gradual pass-through of rising costs permitted in Phase IV seems reasonable to us when viewed as a transitional step toward the goals of de-control which we have advocated and still prefer. Despite the problems associated with the Economic Stabilization Act, we are confident we will be able to achieve our programmed objectives in fiscal 1974." (Top Quartile profits company).

"We have conscientiously complied with the controls and regulations imposed by each of the various phases of the economic stabilization programs...while we are in agreement with the general intent of the government's economic control effort, which is to curb inflation and bring balance to the economy, we firmly believe that the economy would be better served by the absence of controls and we look forward to the early removal of these regulations." (Top Quartile profits company).

These quotes come from a study of eighty-two companies in the food processing industry which used two methodologies, one a coding and counting of lines of prose for several issues such as corporate social responsibility, acquisitions, and international activities, and a second which organized and presented the actual quotes dealing with a number of topics such as price control, foreign joint ventures, and strategic planning. Even with several years of a company's reports the analysis may suffer from the problems of generalizations from small samples. However, viewed as an unobtrusive projective test, content analysis and organization of annual reports may yield a comparative picture at a distance, a gestalt, not readily available through other methods.

The question can be raised as to where content analysis might be more helpful in understanding corporate strategy. The essence of strategy is to match the distinctive competence or comparative advantage of the company with the developing opportunities in the environment, so as to serve the goals, both implicit and explicit, which exist. Following the development of a strategy for the firm or of its units it is necessary to work out a systematic implementation scheme which follows and supports the strategy. This scheme will involve programs, plans, organization arrangements, and budgets to serve the strategy. Because conditions change and problems develop it is also necessary to work out a systematic control scheme to track and correct the strategy and its implementation. [Bowman, 1974]. While the content analysis of annual reports may serve any of these aspects of an analytical structure,

the two probably most open to advantage are (a) environment and (b) control.

The commercial environment is probably the component of the analysis best served by content analysis of annual reports. Industries especially--competitors, suppliers, customers-- may be better understood with the use of such analysis. It is a way of catching broad trends in such groups of companies. It is also a primary source of information for indivdual competitor analysis.

"Control" for the purpose of corporate strategy remains a relatively uncharted field, both academically and industrially (a statement repeated from a decade ago - "Epistemology"). For control one needs comparisons, e.g., performance to plan, plans to strategies, strategies to external assumptions. One very useful way for determining at least some elements of external reality in the aggregate of sister corporations is through content analysis of their annual reports.

Validity Testing of Annual Report Content Analysis

Because it is usually the case that several people read and code the written documents, and their coding can be cross-checked, consistency of interpretaton can be reasonably assured, (as in the following examples). The question can still remain about the correspondence between the documents and objective reality. This may be thought to be of particular importance with corporate annual reports.

For this reason in our work we made several tests from external independent data to assure ourselves and the reader of a reasonable correspondence with objective reality. Before describing these tests however, it should be stated that these reports have the advantage of unobtrusive measurement and that they are written for purposes and to audiences different from the content analysts. That is they are like a projective test taken

inadvertently. In addition while some people maintain that the prose sections of annual reports are written by public relations staffs sometimes external to the firm, the truth is that the typical chief executive officer spends considerable time outlining the contents of the report, sketching out much of it, and proofreading and changing most of it to his taste . The CEO tends to view the annual report as a major if not the major communication device to many constituencies, both internal and external, concerning his and the company's performance.

The tests which were undertaken in this line of projects were as follows [Bowman, 1976]. The first empirical test of annual report discussion involved a search for a list of companies independently generated as outstanding in their corporate social responsibility activities. Milton Moskowitz, editor of Business and Society had provided such a list in the New York Times, February 11, 1973. Included in his brief article were fourteen companies he considered outstandingly responsible firms. Our first test chose fourteen other companies to supply as matched pairs for comparison purposes. Each of these fourteen matched pair companies of this second set was chosen from the same industry as the corresponding Moskowitz company, and randomly selected from firms of approximately the same size. Annual reports for 1973 were obtained from all twenty eight companies (ie. 2 x 14). We coded each of these reports on a line-by-line basis as to whether or not the line was discussing issues of corporate social responsibility.

The test hypothesis was that the outstandingly responsible companies discussed issues of corporate social responsibility significantly more in their annual reports on a line-by-line coding basis than did the neutrally chosen matched pair companies. Recall that the annual report, though written for many purposes, is written essentially to the shareholder, and one should

not expect unusual puffery on issues like corporate social responsibility, (or international activities, something to be discussed shortly).

The test hypothesis was confirmed, as the average for the outstanding group was a 4.80 percent discussion of this topic, close to three times the average for the randomly chosen matched pair group of 1.74 per cent discussion, (statistically significant in binomial pair-wise comparison at the .017 level of confidence).

The second independent and completely different test of the correspondence between annual report discussion and objective reality was in the area of international activities. Similarly to the line-by-line coding of corporate social responsibility discussion, a coding on international activity discussion was made from a set of annual reports to determine the percentage of the total discussion devoted to this topic. That is, lines of annual report discussion of international activity were coded and counted. The annual reports obtained were from the food processing industry as listed in Moody's Industrial Manual, 1973, and restricted to those companies which are listed on the New York Stock Exchange.

For these forty companies Standard and Poor's provides detailed reports including in most cases the percentage of the company's business generated by international activities. The two sources of international activity measures, one from content analysis of the 40 annual reports, and one from a received source of objective reality, Standard & Poor reports, could then be compared. A rank order of company international percentage activity for both lists separately were compared. This comparison of the two lists, both ranked from high to low in activity rate, offers a different test of annual report line-by-line coding. Using the Spearman Rank Order Correlation Coefficient, the list orders were significantly similar (coefficient of 0.65, level of

significance beyond 0.001). That is, annual report discussion gives results consistent with Standard & Poor reports.

Both tests of annual report content analysis - each with different topic, different industries, different external reality source, different statistical test - suggest that annual report discussion, line-by-line, is a reasonable surrogate for real activity. Clearly a sizeable sample, such as several dozen or so companies in an industry, is more reliable that one or two companies. For strategic analysis, as for most other questions, the limited data sources will have to be treated sensibly given the purposes of the analysis.

Corporate Growth as Example

For purposes of content analysis illustration, one study will be described here dealing with rates of growth within an industry. Here is an issue anchored in uncertainty. What are the attitudes about growth, what are the causes, and what are the effects? Much of the strategy literature assumes growth of an industry is not only good, but the more growth the better. BCG's (Boston Consulting Group) popular matrix of growth vs. market share, and McKinsey's matrix of position versus attractiveness feature industry growth as desirable. While this position is not directly in question here, how about company growth? The possibility was examined that controlled growth might be at least a useful concept. Growth too fast can be troublesome in a number of ways, and with various unattractive consequences.

A rapidly growing even turbulent industry was chosen to address this issue along with several others such as environmental coping, customer orientation, international activities, and vertical integration [Bowman, 1978]. The computer peripheral and minicomputer industry was taken from the Dun and Bradstreet Million Dollar Directory 1975, which listed the industry as

S.I.C. Code Number 3573. All companies with more than one additional industry involvement were excluded from the sample in order to have a focused group. After discovering that twenty plus companies were divisions or privately held companies, a set of forty-six 1974 annual reports were obtained for content analysis. As in the validity tests described earlier, the content analysis involved a line-by-line coding and counting of discussion of issues in the annual reports.

Frequently a variable, attitudes toward it, causes of it, and effects from it, will require a series of surrogate variables for measurement purposes. This seemed to be the case with (controlled) growth, and so for this industry and these annual reports, a series of four surrogate variables were used:

a) Sales Divided by Sales Two Years Earlier

b) New Products Described/Total Lines

c) Acquisitions and and/or Organization Change

d) Footnote Lines to Financial Statements

The sales comparisons for two different years (a) can be calculated directly from figures given in the annual report. The other three measures require a bit more investigation and/or content analysis. Both the number of lines devoted to new products (b), a contributor to growth, and acquisitions and organization changes (c), a contributor and associate of growth, can be determined through line-by-line content analyses. Footnote lines to financial statements (d), is used as a second order surrogate for growth. As a ratio to total lines of prose in the annual report, this has some correspondence to the financial complexity of the corporate balance sheet. Because much of the product shipped by these companies is leased using third parties, footnotes will address these complex transactions. Struggle for such capital will be in

part reflected by extensive footnotes suggesting rapid growth. The following table from the California Management Review captures the consistent picture of these variables correlated to profitability.

The interesting thing about this exhibit is the consistency of the results. All surrogate variables for growth show that the average profit is highest in the middle group, i.e. average growth in this industry. The binomial matched pair comparison test statistical significance figure is shown separately for each surrogate, and though the statistical test would be rather complex, the combination of all surrogates showing the same result is highly significant. These results are consistent with some previous studies [Bowman, 1963, 1975], that is, average behavior within an industry in some rather uncertain situations is a reasonable guide. At least the strategy analyst can use content analysis of annual reports to generate some data for his/her further analysis.

This topic of rate of growth touches the interesting topic of goals of the firm and of the manager. The possibility of some difference between the goals of the firm and of the manager is treated in a growing body of literature. Where size, which results from growth, has been allowed as the prime corporate goal by a set of economists, (Baumol, Marris, Galbraith) for a decade or two, more recently more extensive literature dealing with this goal conflict has been labelled agency theory and its correlates (Jensen & Meckling, 1976; Williamson, 1975). The goal conflict idea may contribute to our understanding of a risk/return paradox as explored later in this paper in the following section on risk.

GROWTH TABLE

Explanation Key to Exhibits by Line

(1) Surrogate variable name, and statistical significance.
(2) Company numbers ranked according to surrogate variable in three industry segments, (thirds, except where surrogate variable is zero).
(3) Surrogate variable ranges from content analysis.
(4) Median of 3 year, 1972,1973, 1974 ,return on sales before taxes for company sets.

(a) Sales Divided by Sales Two Years Earlier, 0.138

Low (15)	Medium (16)	High (15)
< 1 - 1.5	1.6 - 2.0	2.0 - 47.4
0.6%	10.4%	6.0%

(b) New Products Described(% Total Lines), 0.010

Low/Zero (10)	Medium (18)	High (18)
0	0.7 - 8.0	8.7 - 51.7
0.1%	9.1%	6.4%

(c) Acquisitions and/or Organization Change,(% Total Lines) ,0.138

Low/Zero (18)	Medium (14)	High (14)
0	0.4 - 3.7	4.5 - 40.0
5.5%	9.3%	2.9%

(d) Footnotes Lines to Financial Statements,(% Total Lines), 0.198

Low (15)	Medium (16)	High (15)
0.2 - 0.9	1.0 - 1.4	1.4 - 15.3
6.8%	7.5%	-0.2%

Source: E. H. Bowman, "Strategy, Annual Reports and Alchemy" California Management Review, Spring 1978.

Risk

Our current use of content analysis is addressed to questions of strategic risk and uncertainty. What does risk mean to corporate managers? How is it measured, what is the attitude toward it, and under what various circumstances? How is it perceived in different topical areas?

Virtually any analysis and any decision involves uncertainty in some form. Assuming a choice is being made from among some alternatives, the outcomes of these alternatives which will occur in the future and be due in part to numerous factors external to the firm must be problematical. Certainty or certainty equivalence may of course be assumed by the analyst, consultant, or manager as a heuristic and as a matter of convenience or even for smaller problems as a matter of efficiency. But for larger problems some explicit treatment of the risk and uncertainty may be advisable.

For the use of content analysis of annual reports in the area of uncertainty and risk, a series of studies of annual reports using three separate industries, the food processing industry, the minicomputer peripheral industry, and the container industry have been conducted. In addition two studies using all industries from Value Line and Standard and Poor Compustat tapes have addressed some questions of risk behavior and empirical relations between risk and return. Before describing these studies in the context of strategic analysis using annual report content analysis to help understand risk, a conflict from the literature, an interesting intellectual triplet, will be briefly explored.

Probably the modern literature with the earliest claim to a systematic treatment of risk is statistical decision theory. This material was incorporated into a treatment of strategic questions several decades ago [Hertz, 1964]. Where a number of project alternatives are deemed available to

the firm, and the outcome evaluations are dependent on several or a series of variables, such as sales estimates, cost tables, time schedules, a mathematical combination of probabilities and values can be obtained. In complex situations a computer Monte Carlo simulation can be run in order to place a value (and distribution) on each alternative. Typically these studies using statistical decision theory have been risk neutral, not as descriptive of reality, but for normative purposes. That is they have solved, and do now solve as in much of Management Science literature, for a maximum expected value disregarding the distribution spread ("higher moments") of this value. Or even where the distribution is shown, no risk preference is specifically indicated. Strategic Management and Business Policy: A Methodological Approach by Rowe, Mason, and Dickel supports the contention that this intellectual position is one which currently contends for use [1982].

A second school of literature and now perhaps the dominant one for strategic analysis, though newly applied to this field, is that of financial economics. This literature is strongly oriented to financial markets, eg. stocks, bonds, and options, and draws its generalizations largely from theoretical and empirical studies of these markets. What they demonstrate is that in the financial markets risk is positively associated with return. The risk here is that which is correlated with the general market, or more broadly with business performance generally, and which therefore may not be diversified away, (called "Systematic risk"). This positive association between risk and return is equivalent to stating that security owners, the investors, will require a higher return where they are willing to assume a higher risk. This is the risk averse attitude which has taken on a ubiquitous character in this financial economics literature.

Derivative from this literature and these market findings is the fairly widespread work now by consultants in corporate strategy arguing that companies, divisions (SBU's) of companies, and projects of divisions should reflect this risk aversion as captured in the capital asset pricing model (CAPM) from the stock market in their decision making.

So far then in the triplet, management science and statistical decision theory have given us risk neutrality, and financial economics has given us risk aversion. It remains for psychology and behavioral science to bring us risk seeking, the third position of the intellectual reed. Interesting recent work published in Econometrica, Science, and Management Science, has presented conclusive experimental evidence that the majority of individuals are risk seeking when they are in a loss situation or below their target or aspiration levels. [Tversky and Kahneman, 1981 and Laughhunn, et al 1980]. Tversky and Kahneman in their frontal attack on expected utility theory develop a new construct labelled "prospect theory". Much of the experimental subjects' attitude is colored by what are called the framing of acts and the framing of outcomes. Though an inadequate summary of the ideas, this is captured in the vernacular by them with "the observation that bets on long shots are most popular on the last race of the day". In other words, risk seeking is common in situations where aspiration levels are not being met.

The empirical industry work which led to further content analysis of annual reports was our discovery that within a majority of industries company risk and return are negatively correlated, ("A Risk/Return Paradox for Strategic Management," Sloan Management Review, Bowman, 1980). Working with accounting measures, over 5 to 10 years, and using return on equity as return, and variability of returns as a measure of risk, both standard treatments from economics literature, showed this negative correlation. That is, companies

with more variable income had lower average returns. The Value Line based study of eighty-five industries, with 1572 companies, showed that fifty-six of eighty-five industries were negatively correlated (a statistical significance beyond 0.001). The Standard and Poor Compustat based studies [Treacy, 1980] with 54 industries and 1458 companies showed that 43 of 54 (about 80%) had a correlation coefficient that was negative, and controlling for size of company (to eliminate a counter argument that size explains all things) only drops the number of negative partial correlations from 43 of 54 to 39 of 54 (Still significant beyond 0.0001).

Using accounting measures of risk and return relates our study only obliquely to modern finance theory which utilizes market returns to investors for both of these measures. This point will be touched on later but it can be pointed out that studies by Beaver, Kettler, and Scholes [1970] demonstrated that the accounting measures and the market measures for firm risk are highly correlated, even including the partial correlations with the market as a whole. In fact it is unlikely that the negative correlation paradox will exist in the securities markets, for the reason that the markets can and do compensate for the higher return and lower variance by pricing such a security at a higher level, thus lowering the subsequent returns. In other words, the market masks such a paradox.

A number of explanations for the negative correlation of risk and return of companies within industries can be given including managerial, statistical, accounting, and attitudinal. Our main purpose here is to investigate two plausible reasons in summary,namely that companies which take larger risks become less profitable, and that companies which have been less profitable take larger risks. Either or both of these cases would account in part for the paradox of the negative correlation.

However, the first explanation is seriously questioned by financial economics (irrespective of a different approach to risk and return measurement), while the second explanation is supported by the behavioral literature cited earlier here. Both of these explanations have now been examined using content analysis of annual reports. The behavioral explanation is supported as reported in "Risk Seeking by Troubled Firms," Sloan Management Review, [Bowman, 1982]. The financial economics refutation is confirmed as will be reported here by a further study.

The details of the first study can be found in the Sloan Management Review paper, and will only be briefly described here. Three surrogate variables for risk, all derived from content analysis of annual reports, were identified:(a) acquisition activity, (b) litigation involvement, and (c) new activities and ventures. All were measured by the content analysis from three different years in three different industries, food processing, mini-computer/ peripherals, and containers. In all tests, companies which had been less profitable on the average for a previous time period, manifested a more favorable following attitude toward risk,as measured by the surrogate variables held to be associated with risk, than those companies which had been more profitable. In food processing, higher acquisitions were associated with a previous profit level of 8.9%, and fewer acquisitions were associated with a previous profit of 12.8% average. In the computer peripheral industry, more litigation was associated with a previous average profit of 0.9% (barely breakeven), and less litigation was associated with a 6.2% profit on sales. In the container industry a bottom quartile previous profit group with 6.9% median profit was associated with a count of new activities of 6 median from content analysis of the president's opening letter while a top quartile 14.8% profit group was associated with a count of new activities of 2 median, only manifesting one third of the risk attitude.

All of these studies utilize a surrogate measure of risk. Though risk is normally measured after the decision effects by researchers and then in aggregate form, the attempt here is to measure surrogates before or concurrently with the decisions as the risk approximations. All three give evidence which supports the behavioral notion derived from individual person experimental results of risk seeking in unfavorable circumstances. That is, companies that are doing poorly, apparently are inclined to take more risks.

The test of whether companies which take more risks then become less profitable uses content analysis of annual reports in the container industry. The attitude and behavior toward risk is captured from the set of 1976 annual reports from the twenty-six companies listed by Value Line at that time for this industry (one, Kerr Glass had been eliminated as it gave only 3 previous years of results). It was then possible to compare an annual report derived measure of risk (1976) with a subsequent five years (1977 - 1981) profit performance. As will be seen we had the advantage then of both a 5 year period before and a five year period after the risk measures.

Four surrogate measures of risk were chosen, and these correspond roughly to managerial risk, legal risk, technological risk, and financial risk. The surrogates may be less than perfect approximations but they are treated as a composite which in part ameliorates their flaws. The work is offered as exploratory, and further improvements should be possible. The four surrogates for managerial, legal, technological, and financial risk are:

(a) "new", the number of times the word new appears in the president's letter at the beginning of the annual report,

(b) litigation, the number of lines in the footnotes to the financial statements of the annual report dealing with litigation,

(c) research, the percentage reported of research and development to total sales (and where this is not reported, implied in this rather stable industry is that it is not very important or significant),

Though any of these surrogates are arguable in their association with risk, and research would be a particular example, a quote from Mr. Noyce, CEO of Intel (Sloan magazine, Summer 1982, p. 13, distinguished speaker series) shows his assumed association, "To maintain its innovative environment, Mr. Noyce told his audience of students and faculty Intel has 'tried to continue risk orientation - very heavy emphasis on R & D...'".

(d) Long term debt divided by equity, this financial leverage is a direct measure of one kind of financial risk taking.

The variables, the companies, and the measure, are all shown in the following table. Four companies with missing 1977-1981 profit data were used for the earlier period, but 3 were subsequently bought and one (Saxon) went bankrupt.

All values of the surrogate variable measures of risk have been normalized by the averages of their columns. That is, American Can has 1.2 times the average number of new mentions as well as the average (1.0) financial leverage position. This treatment holds for all variables and all companies. The purpose of normalizing these measures was the intent to add them across by company as summary measures of risk for comparison purposes. The $\sum$ column gives this measure for each company. It is then possible to compare the aggregate risk measure with the subsequent profitability and change in profitability of each company. The ROE (return on equity) for the previous and subsequent sets of five years are also shown in the following columns as is the ratio of the subsequent to the preceeding sets of 5 years each.

The following 2 x 2 contingency tables show that the aggregate risk measure is not associated with either subsequent profits, or change (increase/decrease) in subsequent profits.

CONTAINER INDUSTRY*

Normalized by Column Average	"New"	1976 Litigation	R&D	L. Debt/Eq.	Σ	Avg. ROE 72-76 5 yrs.	Avg. ROE 77-81 5 yrs.	ROE 77-81 / 72-76	Beta
1 American Can	1.2	4.3	3.1	1.0	9.6	10.4	10.3	0.99	.70
2. American Greetings	0	0.5	0	0.3	0.8	12.4	13.5	1.09	1.30
3. Anchor Hocking	0.4	0	0	0.7	1.1	11.3	11.5	1.02	.85
4. Avery Int'l	2.2	0	0	0.9	3.1	10.9	13.5	1.24	1.10
5. Ball Corp	0.8	0	0	1.1	1.9	11.0	13.8	1.25	.80
6. Bemis Co.	0.8	1.6	2.0	0.8	5.2	8.9	10.8	1.21	.85
7. Brockway	0.2	0	0	0.8	1.0	11.1	8.7	0.78	.90
8. Clevepak	2.0	0	0	0.7	4.2	14.4	7.6	0.53	.90
9. Continential Group	0.2	1.9	2.9	1.0	6.0	12.8	11.8	0.92	.80
10. Crown Cork & Seal	0.2	0	0	0.2	0.4	14.3	13.9	0.97	1.00
11. Dennison	1.4	0	4.8	0.7	6.9	11.8	15.0	1.27	1.10
12. Diamond Int'l	5.8	1.6	0	0.3	7.7	13.5	9.5	0.70	.90
13. Dorsey	0	0	0	1.4	1.4	7.7	11.4	1.48	1.10
14. Federal	0.4	1.4	0	1.3	3.1	11.1	11.7	1.05	.75
15. Fibreboard	1.2	2.0	0.4	3.4	7.0	- 11.9			.85
16. Inland Container	0.2	0	0	0.7	0.9	14.6			.90
17. Lenox	0.4	0	0	0.2	0.6	15.6	16.5	1.06	1.00
18. Maryland Corp	1.0	0	3.6	1.2	5.8	10.6	13.1	1.24	1.10
19. Nashua	1.0	0	3.6	1.1	5.7	11.6	14.7	1.27	1.00
20. National Can	0.6	0	0	1.4	2.0	10.9	11.0	1.01	.90
21. Owens-Illinois	0.6	1.0	3.1	1.2	5.9	10.2	10.3	1.01	.90
22. Papercraft	0.4	6.6	0	0.8	7.8	12.2	14.8	1.21	1.00
23. Rexham	2.0	2.6	1.8	0	4.4	8.1	13.0	1.60	1.15
24. Rust Craft	1.8	0.6	0	0.7	3.1	7.8			1.05
25. Saxon	0.8	0	0	2.4	3.2	6.0			1.50
26. Stone Container	0.4	0.5	0	1.7	2.6	15.3	14.4	0.94	.95

* Table background due to Ms. Barbara Barnhart, Ohio State University

ROE (1977 - 1981)

∑ risk	hi	lo
hi	5	6
lo	6	5

Change ROE $\frac{(1977\text{-}1981)}{(1972\text{-}1976)}$

∑ risk	hi	lo
hi	6	5
lo	5	6

These new data then do not support the idea that the negative association across most industries, between company risk and return ("The Paradox") is explained by the possibility that companies which take higher risk subsequently have lower profits. An additional check on the median profits of the two groups, high and low risk, is consistent with this lack of finding. High risk had subsequent median profits of 11.8% and low risk had 11.5%, not a significant difference, nor even in the direction of the question raised. The ratio of change shows similar results, 1.06 and 1.01.

The extended table of surrogate measures does, however, permit a new and further supporting test of our previous explanations that lower profits may lead to higher risk seeking. The previous 5 years period (1972-1976) lowest quartile of profits group had a 1976 aggregate risk median measure of 4.4 while the highest quartile of profits group (1972 - 1976) had a 1976 annual report aggregate risk measure of 0.9, only one fifth the lowest profit group. That is, the companies with lower profits in the earlier period subsequently evidenced riskier behavior. This supports the argument of the earlier paper, "Risk Seeking by Troubled Firms," (and indirectly supports the new content analysis aggregate measure of risk).

The explanation of the risk/return paradox then as explored by these studies is consistent with received theory - Behavioral for risk seeking in troubled circumstances, and Financial Economics for lack of diminished profits by risk takers, (which is indirectly confirming evidence for the first explanation for the Paradox). That is, with the negative correlation within industries of accounting measures of risk and return, two general explanations are possible. One is that low profits trigger higher risks, and the other is that higher risks subsequently generate lower profit. The first is consistent with the behavioral experiments and is supported here by the content analysis

test, reinforced by the subsequent test in the container industry. The second possible explanation that higher risk causes lower profits, is neither confirmed by the content analysis test here nor consistent with financial economic theory, a theory transformed here from partial market measures to total accounting measures.

A further test of this second point is possible in the container industry using the more standard market measure of risk, Beta (β), in the container industry. This is the financial markets measure of firm risk as correlated with the general market. The last column in the data table shows the measure of β, market related risk, as calculated by Value Line in 1976. Testing this measure of risk against subsequent (accounting) profits shows remarkable support for the capital asset pricing model, perhaps a different test than ordinarily presented. The following tables show that β is highly and significantly correlated with both subsequent profits, and change (increase) in profits. The market as a whole as measured by the S & P index increased about 10% on the average between the two five year periods bracketing 1976 (and the set of annual reports).

		Beta	
		hi	lo
ROE Average 1977-81	hi	10	1
	lo	1	10

		Beta	
		hi	lo
Change in ROE $\frac{1977\text{-}81}{1972\text{-}1976}$	hi	9	2
	lo	2	9

Conclusions and Speculations

Our intent has been to demonstrate that content analysis of annual reports has some value to analysts of corporate strategy. It should be considered as a source of both data and ideas in this rather complex task. Where data may be extremely difficult to obtain for some purposes, an alternative data source which may be readily available should not be ignored.

In sum for content analysis, it is a method which can be of real usefulness for understanding some issues of corporate strategy. It can be useful as a primary or supplementary source of information and is valid if treated carefully. It can be useful for full quotation comparisons for individual company investigations. It can be especially useful for analysis of particular industries, primarily for current changes and past correlates of performance. Finally, it can be useful for more general or more theoretical investigations of questions of interest to scholars, consultants, and managers.

Based on our use of content analysis, there may be room for the entire conflicting triplet of risk preference -- risk aversion, risk neutrality, and risk seeking -- depending on the context of the question. While there may be many managerial implications which follow further insight into risk, only one will be mentioned here. Diversification within the corporation has been of continuing interest to not only managers, but also to students of management [Salter and Weinhold, 1979].

A richer understanding of risk and risk attitudes should be helpful. The now classical position of financial economics is that diversification qua diversification should be left to the securities owner in the market place, and not something for the firm to benefically undertake. This of course is aside from other than risk reasons for diversification, such as economies of scale, or shared facilities, or vertical integration.

A recent study by Amihud and Lev [1981] has demonstrated that diversification mergers have been taken in the interest of the managers to reduce their (career) risks. They go on to argue that since compensation of managers is necessary in the context of agency theory (potential conflict of interests between managers and owner), that such diversification can then be held to be related to the interest of the firm, that is as a form of management compensation.

If it can be further held that businesses or business units which are troubled and below target levels are in the majority risk seekers, it can then be argued that the diversification and aggregation of such units with other "normal" units will permit the top managers (hierarchies not markets) to sensibly control these units in their strategic plans and actions.[Bowman, 1982].

In sum, diversification may not be theoretically justified based on the simple assumptions of financial economics about risk. But it may be justified based on the behavioral aspects of management risk ala agency theory. And it may be further justified to permit hierarchial control, based on the propensity of risk seeking by troubled units.

One of the major puzzles for a group of managers facing choices in corporate strategy is the issue of risk. Financial economics emphasizes the overarching importance of systematic risk, the partial component of risk which is correlated with the general market. While this is important for a normative view from the financial market place, it slights the behavioral importance of total risk to the managers. It is the total risk which is their risk, and a better understanding of total risk at the level of the firm, and managers' attitude toward it under various circumstances --aversion, neutrality, or seeking-- is warranted.

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